## REMARKS

Applicants respectfully request entry of the Amendment and reconsideration of the claims.

Please cancel claims 6-7 and 10-11 without prejudice or disclaimer. Applicants reserve the right to pursue the subject matter of these claims in one or more continuation applications.

Applicants have amended claims 1 and 3 to reflect the election made in response to the restriction requirement of October 4, 2004. Support for this claim amendment can be found throughout the specification, including at Fig. 14. No new matter has been added through the claim amendments.

Claims 1 and 3-9 are pending; claims 8-9 are withdrawn and currently amended. Applicants request rejoinder of the method claims (claims 8 and 9) upon notice of allowance of claim 1.

**Objections to the Specification**

The Examiner objects to the specification for not disclosing the specific sequence of the chicken MyoD or the CDK4 used in the working examples.

*Chicken MyoD.* The Examiner alleges that the specification fails to disclose the structure of the MyoD used in Working Examples I-VIII and X-XIII. Applicants respectfully traverse.

As submitted in the previous response, the specification recites GenBank Accession No. L34006 (Dechesne et al., 1994) for the sequence of chicken (*Gallus gallus*) MyoD. Examples I (p. 19, line 31, and p. 20, line 7), II (p. 21, line 5), III (p. 24, line 17 and line 35), IX (p. 31, line 20), and XI (p. 33, line 10) disclose that chicken MyoD was used. At the time of filing, and even today, there was only a single known chicken MyoD protein (search of the NCBI database on December 8, 2005). Thus, Applicants respectfully assert that the recitation of GenBank Accession No. L34006 provides the structure of chicken MyoD, and thereby the structure of the MyoD used in the Working Examples.

Applicants further submit that Examples IV, V, VI, VII and XIII were conducted in C2C12L mouse myoblast cells or 10T1/ mouse fibroblast cells, respectively, indicating that mouse MyoD was utilized. A person having ordinary skill in the art would understand the myoD

to be chicken except in the *in vivo* experiments using mouse C2C12L cells or 10T1/2 cells. Applicants respectfully request reconsideration and withdrawal of this objection.

*Cyclin Dependent Kinase 4 (CDK4).* The Examiner alleges that the specification fails to disclose the structure of the CDK4 used in Working Examples I-X, XII, and XIII. Applicants respectfully traverse.

Applicants make reference throughout the Examples to CDK4 prepared from an Sf9 insect cell expression system. In several instances, Applicants make reference to the protocols established by Kato et al. (1993, *Genes & Dev.*), including this expression system. See p. 30, lines 14-24; p. 33, lines 22-25. As such, Applicants disclose the use of mouse CDK4 in the Examples (see p. 340, first column, first paragraph of Kato et al.). Thereby, the specification discloses the use of mouse CDK4.

Moreover, in *Capon v. Eshhar*, 418 F.3d 1349, 1360-1361 (Fed. Cir. 2005), the Federal Circuit ruled that 35 U.S.C. § 112 does not require recitation in the specification of a nucleotide sequence of claimed DNA, when that sequence is already known in the field. The objection sets forth a higher standard than that applied to claimed sequences, and the Applicants respectfully assert that it is an improper objection due to this higher standard. Applicants have provided references to those sequences in the specification, and one of skill in the art would readily be able to utilize those references to obtain MyoD or CDK4 sequences.

**Objection to the Claims**

The Examiner objects to the claims for reciting non-elected subject matter. Applicants have amended the claims to specifically recite the elected sequence. In view of this amendment, this objection is now moot.

**Rejection under 35 U.S.C. § 112, first paragraph**

**A. Enablement**

The Examiner rejects claims 1, 3-5, and 10-11 under 35 U.S.C. § 112, first paragraph, for an alleged lack of enablement. The Examiner contends that the scope of the claims is not commensurate with the scope of the disclosure. Applicants respectfully traverse.

To meet the enablement requirement of 35 U.S.C. §112, first paragraph, a specification must contain a sufficient description to enable one skilled in the art to make and use the claimed

invention (*See, e.g., Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1253 (Fed. Cir. 2004); MPEP §2164.01). A specification does not need to explicitly disclose every detail, and may omit what is well known in the art (*In re Buchner*, 929 F.2d 660, 661 (Fed. Cir. 1991); MPEP 2164.01). To make and use an invention may require experimentation even if the specification is enabling (*In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988); *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 750 F.2d 1569, 1576 (Fed. Cir. 1984); MPEP §2164.01). The experimentation must not be unduly extensive (*Id.*), however, costly and timely experimentation alone does not constitute undue experimentation. (*U.S. v. Telectronics, Inc.*, 857 F.2d 778, 785 (Fed. Cir. 1988)).

Applicants respectfully submit that the specification in conjunction with known sequences provides sufficient detail to make and use the claimed invention of claims 1 and 3-5 without undue experimentation. Independent claim 1 recites an isolated peptide comprising an amino acid sequence (YSGPPSGARRRNCYE) of said isolated peptide. The claim also recites that the isolated peptide does not include a bHLH domain, as dislcosed at p. 10, lines 12-19, and at Figure 9. Further, the claim recites that the isolated peptide binds CDK4. Applicants disclose the protocol of producing CDK4 as established in Kato et al. (1993) at p. 33, lines 22-23, thereby establishing binding to mouse CDK4 (see p. 340, first column, first paragraph of Kato et al.). Applicants respectivelly assert that the specification sufficiently teaches one how to make and use the claimed invention.

At the time of filing, MyoD was known as a conserved protein. As evidenced by Zhang et al. (1999, *Dev. Biol.* 208: 465-472), MyoD was conserved functionally across different species. Not only was MyoD conserved across different species, but the MyoD family of proteins was functionally conserved across vastly different species. Zhang et al. were able to rescue a *C. elegans* MyoD (*CeMyoD*) loss-of-function mutation by transfecting constructs containing genes encoding either *Drosophila* or chicken *MyoD* proteins (*nau* and *MyoD*, respectively). Applicants have shown the structural conservation of MyoD, including in the 15 amino acid stretch recited in claim 1 (See Fig. 14). This conserved 15 amino acid portion of the MyoD protein binds to CDK4 as confirmed by deletion mapping (See p. 33-34 and Fig. 10). Since MyoD is functionally conserved across species, one of skill in the art would expect that MyoD of any particular species would bind CDK4. Due to the high amount of functional and structural conservation, any MyoD would bind to CDK4.

While not conceding to the Examiner's rejection, even if the claimed peptide requires experimentation, it does not rise to the standard of undue experimentation. Applicants explicitly provide the peptide sequence for the claimed peptide. The claim recites additional limitations of not including a bHLH domain, as disclosed at p. 10, lines 12-19, and at Figure 9. Further, the isolated peptide binds to mouse CDK4. The mouse sequence of CDK4 were known at the time of filing (mouse--NP_0340000). Recitation in the specification of a sequence of claimed DNA is not required, when that sequence is already known in the field. *Capon v. Eshhar*, 418 F.3d 1349, 1360-1361 (Fed. Cir. 2005). Applicants respectfully submit that synthesizing a peptide of the sequence YSGPPSGARRRNCYE, and determining binding to CDK4 based on the multiple binding protocols in the Examples (e.g., p. 33, ll. 22-25) and published sequences in GenBank, would not constitute undue experimentation.

Applicants respectfully request removal of this rejection under 35 U.S.C. § 112, first paragraph, for an alleged lack of enablement.

**B. Written Description**

The Examiner rejects claims 1, 3-5, and 10-11 under 35 U.S.C. § 112, first paragraph, for an alleged lack of written description. The Examiner contends that Applicants allegedly do not convey possession of the claimed invention at the time of filing. Applicants respectfully traverse.

The written description requirement requires that Applicants' specification must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, that he or she was in possession of the invention. *Vas-Cath Inc. v. Mahurkar*, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991). A written description of an invention involving a chemical genus requires a precise definition, such as by structure, formula ... of the claimed subject matter sufficient to distinguish it from other materials. *Univ. of California v. Eli Lilly and Co.*, 43 USPQ2d 1398. 1405 (Fed. Cir. 1997) (emphasis added). Since one skilled in the art can distinguish such a formula from others and can identify many of the species that the claims encompass, such a formula is normally an adequate description of the claimed invention. Id. at 1406 (emphasis added). Moreover, as noted in the Guidelines for Examination of Patent Applications Under 35 U.S.C. § 112, ¶1, "Written Description" Requirement ("the guidelines"), there is a "strong presumption" that an adequate written description of the claimed invention is present when the application is

filed, 66(4) Fed Reg. 1099, 1105 (2001); see also, In re Wertheim, 191 USPQ 90,97 (CCPA 1976). The guidelines further state that "[(The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an Applicants' disclosure a description of the invention defined by the claims." 66(4) Fed. Reg. at 1107; 191 USPQ at 97, (emphasis added).

Example XI specifically exemplifies binding experiments. For said binding experiments, Applicants used the protocols as set forth in Kato et al., 1993 (p. 33, lines 22-25). Kato et al. used mouse CDK4 (see p. 340, first column, first paragraph). Additionally, both mouse CDK4 sequences were well known at the time of filing as evidenced by their deposits into GenBank (mouse CDK4--NP_0340000). Applicants explicitly disclose the binding to mouse CDK4. Due to the conserved nature of the MyoD protein, both structurally and functionally, Applicants assert that the claimed peptide, which conserved cross-species, would bind any CDK4. Thus, Applicants respectfully request removal of this rejection.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first paragraph.

**Rejection under 35 U.S.C. § 112, second paragraph**

The Examiner rejects claims 1, 3-5, and 10-11 under 35 U.S.C. § 112, second paragraph, for alleged indefiniteness. The Examiner contends that a polypeptide binding to any one of an extremely large number of "cyclin-dependent kinase 4 proteins" makes the metes and bounds of the claim unknown. Applicants respectfully traverse. Applicants have shown that the MyoD polypeptide (Zhang et al., 1999) is functionally highly conserved. Applicants have also demonstrated that the claimed peptide (Figure 14) is highly conserved structurally. Applicants have also demonstrated the binding of the 15 amino acid peptide to CDK4 at pages 33-34 and Figure 10. Due to the binding and the sequence conservation, one would expect that this peptide could bind cross-species and thus bind other CDK4s. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, second paragraph.

**Summary**

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

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